REMARKS

Claims 1-23 are pending in this application. Claims 1-23 are rejected. No new matter has been added. It is respectfully submitted that the pending claims define allowable subject matter.

As an initial matter, claim 11 has been amended to correct a minor grammatical error.

Claims 1-7, 9 and 11-23 have been rejected under 35 U.S.C. § 102(b) as being anticipated by either Barthe et al. (U.S. Patent 6,120,452), hereafter Barthe or Flesch (U.S. Patent 6,425,870), hereafter Flesch I. Applicant respectfully traverses the 35 U.S.C. § 102(b) rejection.

Further, claims 1-23 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Barthe or Flesch I and further in view of either a) Ingebrigtsen et al. (U.S. Patent 5,085,221), hereafter Ingebrigtsen, alone or further in view of Flesch et al. (U.S. Patent 6,733,457), hereafter Flesch II or b) Pawluskiewicz (U.S. Patent 6,007,490) alone or further in view of Ingebrigtsen or Flesch II. Applicant respectfully traverses the 35 U.S.C. § 103(a) rejection.

Barthe describes a three dimensional imaging apparatus having a flexible printed circuit board 30 that traverses a fluid impervious seal 16 between a wet chamber 12 and a dry chamber 14. The flexible printed circuit 30 board connects a transducer array 18 and a motor/gear arrangement 22/24 to electronics in the dry chamber 14 for controlling the powering and movement of the transducer array 18 (column 3, lines 22-27 and column 4, line 64 to column 5, line 46).

Flesch I describes a motorized multi-plane transducer tip apparatus having a flexible cable that extends from a wet chamber through a flexible sealing membrane to a dry chamber (abstract). More particularly, a sheath of flexible circuits 6 along with other conductors and wires extend through an air tight flexible membrane 10 (column 3, lines 45-54). The flexible

circuits 6 provide power to the elements of a transducer 2 in the wet chamber and a motor 1 is also located in the wet chamber with a drive shaft 1a and gear arrangement to move the transducer 2 (column 4, lines 5-24).

Ingebrigtsen describes an ultrasound imaging probe having a liquid filled wet chamber closed by a plug or cover 3 (column 2, lines 41-56). A motor 7, transducer array 5 and position sensor 9 are all provided in the wet chamber and provided on a common rotatable axle 10 (column 2, lines 57-66). A flat cable 12 in the wet chamber has a widened region for connection to pins 3A-3Y of the plug 3 at one end and soldered or bonded at the other end to another flat cable 11 that is connected to the transducer array 5 (column 3, line 27 to column 4, line 18).

Flesch II describes a motorized multi-plane transducer tip apparatus has a PCB in a wet chamber sealed by an o-ring at an interface between a membrane 10 and a housing 5 having acoustic coupling liquid 13 therein. The housing 5 also contains the transducing and motorization components immersed in the acoustic coupling liquid 13 (column 4, lines 47-65).

Finally, Pawluskiewicz describes an ultrasound probe with no wet chamber and having an ultrasonic transducer 12 connected to a flex circuit 12 connected to another flex circuit 18 via a connector 16, with the flex circuit 18 connected to a printed circuit board 20 having electrical tabs 40 and 42 for connection to a coaxial cable 24 (column 2, line 54 to column 3, line 13). The connector 16 may be unmounted and move freely within a housing 34 or securely fastened to the printed circuit board 20 (column 39-49).

Independent claim 1, as amended, recites an ultrasound probe comprising "a single connection member within only the second chamber having a rigid portion and a flexible portion, the rigid portion forming at least part of the sealing member." The cited art fails to describe or suggest an ultrasound probe as recited in claim 1.

In particular, the flexible printed circuit board in Barthe extends through the fluid impervious seal and therefore is contained within both the wet and dry housing modules.

Similarly, the flexible cable of Flesch I extends through the flexible sealing member and therefore is contained within a wet chamber and outside the probe housing. In contrast, claim 1 recites a probe having a single connection member within *only* the second chamber. The connection member of claim 1 is a single member that is contained only within one chamber (i.e., in the second chamber and not the first chamber) and not in two chambers. There is simply no traversing of the fluid impervious seal such that a flexible printed circuit board or cable is within two chambers of the probe, which would reduce the reliability of the seal. Also, the probes of Barthe and Flesch I would not operate of the flexible circuit board or cable did not traverse the seal because power then could not be conveyed to the transducer. Accordingly, claim 1 is not anticipated by either Barthe or Flesch I.

Moreover, the other cited prior art fails to make up for the deficiencies for Barthe and Flesch I. In particular, the probe of Ingebrigtsen includes one flat cable soldered or bonded to another flat cable that is then connected to pins of a seal plug. The flat cables and the plug are separate components interconnected together. In contrast, the probe of claim 1 includes a *single* connection member within only the second chamber having a rigid portion and a flexible portion with the rigid portion forming a portion of at least part of the sealing member. No portion of the cables of Ingebrigtsen form a part of the plug nor would it be obvious to combine the Barthe or Flesch I flexible cable and the plug of Ingebrigtsen as a single unit as there would then be no need for the pins. A single member with a rigid portion forming part of a sealing member is simply not described or suggested by Barthe or Flesch I in combination with Ingebrigtsen and such a change is more than a design change. The operation and structure of the probe would have to be changed.

The probe of Flesch II similar to the probe of Flesch I includes a flexible cable that extends through the flexible sealing member and therefore is contained within a wet chamber and also outside the probe housing. Again, in contrast, the probe of claim 1 recites a single connection member within *only* the second chamber. The connection member of claim 1 is a single member that is contained only within one chamber (i.e., in the second chamber and not the first chamber) and not in two chambers. There is simply no traversing of the fluid impervious seal such that a flexible printed circuit board or cable is within two chambers of

the probe as discussed in more detail above. Also, as discussed above, using a rigid portion to form a portion of a sealing member is not described or suggested.

The probe of Pawluskiewicz includes a first flex circuit connected to a transducer and also connected to a second flex circuit via a connector. The second flex circuit is connected to a printed circuit board for connection to a coaxial cable. The connecter and first flex circuit may be separated. In contrast, the probe of claim 1 includes a *single* connection member within only the second chamber having a rigid portion and a flexible portion with the rigid portion forming a portion of at least part of the sealing member. No portion of the flex circuits of Pawluskiewicz form a part of the rigid connector nor would it be obvious to combine the flex circuits/cables of Barthe and Flesch I and the rigid connector as this would defeat the purpose of having the removable connector and accordingly teaches away from the combination. Accordingly, a single member is simply not described or suggested by Barthe or Flesch I in combination with Pawluskiewicz and such a change is more than a design change. The operation and structure of the probe would also have to be changed.

Accordingly, the combination of the prior art as set forth in the Office Action does not describe or suggest an ultrasound probe as recited in claim 1.

Independent claim 15 recites an ultrasound probe comprising "a dry chamber having drive means for mechanically controlling at least one transducer and communication means for electrically controlling the at least one transducer." The prior art fails to describe or suggest a probe as recited in claim 15.

The drive means for mechanically controlling the transducers of all the cited prior art that have two chambers are provided in the wet chamber. In particular, the prior art references describe probes wherein the motor and gear arrangement (and shaft or similar structure) together form the drive means for mechanically controlling the transducers, for example, moving the transducer head, and are all located in the wet chamber. In contrast, the drive means recited in claim 15 is in the dry chamber. Moving the drive means from the wet chamber to the dry chamber is more than a mere design change and would require change to the operation and structure of the prior art devices. Accordingly, the combination of the prior

art as set forth in the Office Action does not describe or suggest an ultrasound probe as recited in claim 15.

Independent claim 20, as amended, recites a connection member for an ultrasound probe comprising "a flexible portion within only a wet chamber configured to connect to at least one transducer" and "a rigid portion forming at least part of a sealing member between the wet chamber and a dry chamber, the rigid portion configured to connect to a system cable in the dry chamber." The prior art fails to describe or suggest a connection member as recited in claim 20. As discussed in more detail above, there is no description or suggestion of locating a flexible portion in one chamber and forming at least part of a sealing member with a rigid portion. Accordingly, the combination of the prior art as set forth in the Office Action does not describe or suggest a connection member as recited in claim 20.

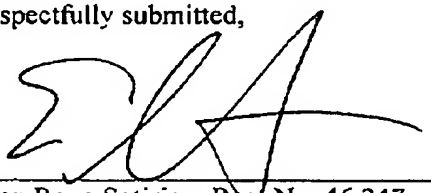
Independent claim 22, as amended, recites a method for controlling an ultrasound probe comprising "communicating between at least one transducer array and a host system via a connection member, the connection member formed of a rigid portion and a flexible portion, the flexible portion entirely within a wet chamber and configured to connect to the at least one transducer array, the rigid portion forming at least part of a wall between the wet chamber having the at least one transducer array therein and a dry chamber having a system cable therein, the rigid portion configured to connect to the system cable, with the system cable connected to the host system." The prior art fails to describe or suggest a method as recited in claim 22. As discussed in more detail above, there is no description or suggestion of locating a flexible portion in one chamber and forming at least part of a wall with a rigid portion. Accordingly, the combination of the prior art as set forth in the Office Action does not describe or suggest a method as recited in claim 22.

Claims 2-14, 16-19, 21 and 23 are dependent claims and are allowable based at least on the dependency of these claims from their respective independent claim.

For at least the reasons set forth above, Applicant respectfully requests that the 35 U.S.C. § 102 and § 103 rejections of the claims be withdrawn.

In view of the foregoing amendments and remarks, it is respectfully submitted that the prior art fails to teach or suggest the claimed invention and all of the pending claims in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited. Should anything remain in order to place the present application in condition for allowance, the Examiner is kindly invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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